Intel® Quark™ SoC X1000 Software

Package Version: 1.2.1.1

Release Notes

June 2016

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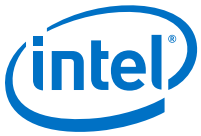

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Revision History

Date	Revision	Description
June 2016	007	Update to correct inaccuracy as follows: • Updated resolved issue 140011 with additional resolution information. • Updated resolved issue 140033 with additional resolution information.
May 2016	006	Added updates for software release 1.2.1.1 to Section 3.0, “Resolved Issues” on page 21.
February 2016	005	General updates for software release 1.2.1 in the following sections: • General release number version updates throughout manual • Section 1.1 “New Features in Release 1.2.1 on Page 5 • Section 2.0, “Known Issues” on page 10. • Section 3.0, “Resolved Issues” on page 21.
September 2015	004	General updates for software release 1.2.0 in the following sections: • Section 1.1 “New Features in Release 1.2.0 on Page 5 • Section •, “Integrated fast boot meta layer ” on page 5. • Section 1.2.2, “BIOS/Firmware” on page 5. • Section 1.2.4, “Linux* Operating System (OS)” on page 6. • Section 1.3, “Limitations” on page 8. • Section 1.5.1, “Packages” on page 8. • Section 1.6, “Related Documentation” on page 8. • Section 1.7, “Licensing” on page 9. • Section 2.0, “Known Issues” on page 10. • Section 3.0, “Resolved Issues” on page 21.
February 2015	003	General updates for software release 1.1.0 in the following sections: • Section 1.1 “New Features in Release 1.1.0 on Page 5 • Section 1.2.3, “Bootloader” on page 6. • Section 1.3, “Limitations” on page 8. • Section 1.7, “Licensing” on page 9. • Section 2.0, “Known Issues” on page 10. • Section 3.0, “Resolved Issues” on page 21.
22 May 2014	002	General updates for software release 1.0.1 in the following sections: • Section 1.1 “New Features in Release 1.0.1 on Page 5 • Section 1.3, “Limitations” on page 8. • Section 1.7, “Licensing” on page 9. • Section 2.0, “Known Issues” on page 10. • Section 3.0, “Resolved Issues” on page 21.
04 March 2014	001	First public release of document.

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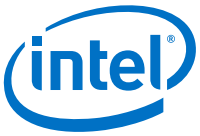


1.0 Description of Release

This document describes extensions and deviations from the release functionality described in the documentation for the Intel® Quark™ SoC X1000 (formerly code named Clanton).

This release is called: Package Version: 1.2.1.1:

Intel® Quark™ SoC X1000 Software supports the following Form Factor Reference Design boards (FFRDs):

- Customer Reference Boards:
  - — Galileo Customer Reference Board (CRB), Fab D with blue PCB
  - — Galileo (Gen 2) Customer Reference Board (CRB), Gen 2 marking
- Intel® Quark™ SoC X1000 Industrial/Energy Reference Design, “Cross Hill”
- Intel® Quark™ SoC X1000 Transportation Reference Design, “Clanton Hill”
- Intel-only System Validation Platform (SVP), “Clanton Peak”
- Intel® Quark™ SoC X1000 Air Quality Management Solution Reference Design, “Reliance Creek”

For instructions on building and running the release software, see the Intel® Quark™ SoC X1000 Board Support Package (BSP) Build and Software User Guide (see Table 1).

These release notes also include known issues with third-party or reference platform components that affect the operation of the software.

1.1 New Features in Release 1.2.1.1

No new features were added in this release. The release provides security updates to address CVE-2015-7547, CVE-2015-1781 and CVE-2016-2108

1.2 Supported Features

Features supported in this release are listed in the following subsections.

1.2.1 Yocto BSP Meta Layer

- Integrated fast boot meta layer

1.2.2 BIOS/Firmware

- DDR Bit Swapping
- Cache enabled for fast boot
- Added TPM1.2 Measured Boot
- GCC 4.3 support is obsolete

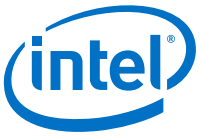
- EDKII code base upgraded to UDK2014.SP1.P1
- Fixed various compilation warnings reported by community
- Increase size for EDKII Stage1 Image 1 and Stage1 Image 2 is removed. This change requires additional steps in Capsule Update. Refer to BSP build guide Section 13 for details.
- I2C Ppi and Protocol access is merged to be I^2C library.
- Recovery:
  - Force recovery support (jumper/strap to force the system into recovery mode)
  - Secure recovery support (recovery capsules must be validly signed for Secure SKUs)
- Update:
  - Secure update support (update capsules must be validly signed for Secure SKUs)
- Secure Lock Down build support for secure SKUs. Includes `-DSECURE_LD` build option for creating image for secure SKUs. This restricts the boot options from EDKII (USB/SD/UEFI Shell boot are not allowed).
- Security features:
  - Protected BIOS Range registers, thus protecting more SPI flash regions.
  - SMI protection of SPI flash (secure SKUs only). Prevents non-EDKII code from updating SPI flash.
- ECC scrubbing (memory patrol scrubbing) disabled regardless of fuse setting
- Switch from SPI flash mapped platform data to ACPI objects for platform ID, MAC addresses, and serial number
- Secure boot using Root Of Trust ROM when using a secure SKU Intel® Quark™ SoC X1000
- Boot device selection:
  - SD boot
  - USB (OHCI/EHCI) boot
  - Payload boot (application in legacy SPI flash)
  - EFI Shell
- ACPI 5.0

1.2.3 Bootloader

- Secure boot Root of Trust when using a secure SKU Intel® Quark™ SoC X1000
- Isolated Memory Region (IMR) protection of compressed Linux* kernel before executing kernel
- Bootloader executed as payload from SPI flash
- Ability to load kernel and root-file system from SPI flash

1.2.4 Linux* Operating System (OS)

- IsADC (including calibration) optional plug-in for timer-based sampling trigger
- Drivers for Transportation Reference Design (Clanton Hill)
  - STMicroelectronics* LIS331DLH Accelerometer Driver
  - Audio Subsystem Driver



  - — Analog AD7298 ADC Driver
- Thermal Driver
- HE910 3G Driver
- WiFi Driver:
  - — Intel® Centrino® Wireless-N 135 (also provides Bluetooth via USB)
  - — Intel® Centrino® Advanced-N 6205 (Dual Band WiFi, 2.4 and 5 GHz)
- I^2C* interface
- IMR protection of kernel, text, and data sections
- Kernel logic to parse platform data specific to Clanton Peak, Industrial/Energy Reference Design (Cross Hill), Transportation Reference Design (Clanton Hill), Galileo Customer Reference Board and Galileo GEN2 Customer Reference Board
- Ethernet
  - — Two Ethernet interfaces: Clanton Peak, Industrial/Energy Reference Design (Cross Hill), and Transportation Reference Design (Clanton Hill)
- GPIOs fully programmable as input or output from kernel gpiolib
- HS-UART interface x 2
- SPI master interface x 2
- USB OHCI/EHCI port x 2
- USB device
- SD master interface
- Small embedded user-space busybox based system < 2 megabytes compressed
- ACPI S3 support
- XSLCAN (channel multiplexing over single Serial Line CAN)
- Clanton Hill: J1708 protocol support
- Clanton Hill: J1939 protocol support
- Clanton Hill: support for dual channel SLCAN (1 high-speed, 1 low-speed
- channel)
- Cross Hill: adds interrupt support to Maxim 78M6610+LMU Energy Measurement Processor
- Adds driver for Texas Instruments ADC1x8S102 ADC device
- 6LoWPAN
  - — Support Yanzi IoT dongle (IoT-U10) as serial radio
  - — Support CoAP, OMA LWM2M, IPSO Smart Object, DTLS

1.2.5 OpenOCD

- OpenOCD support is available with OpenOCD source
- GDB* server and Telnet* server support
- Halt/Step/Resume CPU
- CPU register access
- Memory access
- I/O Access (via OpenOCD command tool, not via GDB)

1.3 Limitations

The software package has the following limitations:

- Support for multiple keys is not included in this release.
- 1588 time-stamping protocol not supported in this release
- Watchdog timer not enabled
- UART limitations:
  - Flow control should be enabled for baud rate > 115200bps.
- No software flow control in DMA mode
- Versioning information is not supported for individual SPI Flash assets.
- MFH SPI Flash version record is inaccurate if Manufacture SPI Flash Binary is built with EDKII standalone build and nonexistent if firmware update capsule is built using EDKII standalone build environment
- CAN limitations:
  - Bitrate limitation: 10 kbps is not supported due to a hardware limitation of the MB91520 Fujitsu CAN controller.
  - Timestamps are not currently added by the IOC firmware prior to sending CAN messages over the UART to the Intel® Quark™ SoC X1000.

1.4 Unplanned Functionality

Support for the following items is not plan of record (POR):

- Network boot
- Legacy OS boot
- ECC scrubbing (also called memory patrolling)

1.5 Component Versions

1.5.1 Packages

Board_Support_Package_Sources_for_Intel_Quark_v1.2.1.1:

grub-legacy_5775f32a+v1.2.1.1.tar.gz

meta-clanton_v1.2.1.1.tar.gz

Quark_EDKII_v1.2.1.1.tar.gz

quark_linux_v3.14+v1.2.1.1.tar.gz

spi-flash-tools_v1.2.1.1.t1Zar.gz

sysimage_v1.2.1.1.tar.gz

xSLCAN_Firmware_for_Intel_Quark_v1.2.0.zip (selected customers only)

1.6 Related Documentation

The documents in Table 1 provide more information about the software in this release.

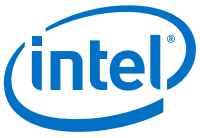


Table 1. Related Documentation

Document Name	Reference Number
Intel® Quark™ SoC X1000 Software Release Notes (this document)	330232
Intel® Quark™ SoC X1000 Board Support Package (BSP) Build and Software User Guide	329687
Intel® Quark™ SoC X1000 Software Developer's Manual for Linux*	330235
Intel® Quark™ SoC X1000 Secure Boot Programmer's Reference Manual	330234
Intel® Quark™ SoC X1000 UEFI Firmware Writer's Guide	330236
Intel® Galileo Board User Guide	330237
Source Level Debug using OpenOCD/GDB/Eclipse on Intel® Quark SoC X1000 Application Note https://communities.intel.com/docs/DOC-22203	330015
Intel® Quark™ SoC X1000 Datasheet https://communities.intel.com/docs/DOC-21828	329676
Intel® Quark™ SoC X1000 Core Developer's Manual https://communities.intel.com/docs/DOC-21826	329679
Intel® Quark™ SoC X1000 Core Hardware Reference Manual https://communities.intel.com/docs/DOC-21825	329678
Clanton Hill and CAN Getting Started Guide This document is provided to selected customers only; contact your Intel representative.	545350
6LoWPAN Support on Intel® Galileo - User Guide - Revision 1.0	559445

1.7 Licensing

This package contains source code licensed under one or more open source licenses. Consult the COPYING, README, or LICENSE files in the appropriate subdirectory. Intel does not make any representations or warranties, express or implied, including without limitation, any warranty of fitness for any purpose, merchantability or non-infringement.

The package also includes executable binaries provided under Intel Proprietary License (IPL) as listed in Table 2. The IPL license file is in the same directories as the binaries in the package.

Table 2. Licensing

Location	Description
...\Quark_EDKII_v1.2.1.1\QuarkSocPkg\QuarkNorthCluster\Binary\QuarkMicrocode\RMU.bin	Microcode for the Intel® Quark™ SoC X1000. (RMU: Remote Management Unit)
...\Quark_EDKII_v1.2.1.1\QuarkSocPkg\QuarkNorthCluster\Binary\Quark2Microcode\RMU.bin	Microcode for a future generation Quark SoC.
xSLCAN_Firmware_for_Intel_Quark_v1.2.0\ioc_combined_image_clanton.mhx	xSLCAN firmware to be programmed to the Fujitsu xLSCAN controller on a Clanton Hill FFRD.

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2.0 Known Issues

Known issues in the current release are listed in the following tables.

Table 3. Known Issue Summary

38292 - Cannot force MMC into 4-bit mode due to kernel bug 11
45539 - SDMediaDevice.efi is setting older 25 MHz cards to 50 MHz 11
53037 - Linux kernel has some debug settings enabled by default 11
57071 - Galileo board is unavailable after host computer sleeps 11
58381 - Attempting to unload a Linux driver which is in use causes console to freeze 11
60003 - Legacy RTC 'Valid' time bit is set even though RTC contains invalid time 12
60147 - Quark enumerates incorrect device class as a USB CDC ACM device 12
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63520 - SMBIOS fields are currently incorrect for the Quark reference platforms 12
64263 - Error detecting Western Digital USB 3.0 hard drive 13
65706 - Hot plug of USB key intermittently fails 13
65952 - USB Errors seen with Sandisk Cruzer 4GB Flash Drive 13
66053 - Poor USB write performance caused by automounter 13
66218 - Nonfunctional USB key may break the detection for other functional USB keys on Clanton Hill 13
69965 - Quark EDKII default exception handler entry point is not valid 14
75161 - Boot log error: memory range cannot be reserved 14
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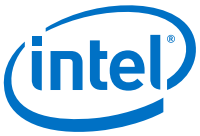
76832 - Error returned when booting from external media 14
78550 - Some USB keys not recognized by Quark EDKII recovery on Galileo and Galileo Gen2 14
83572 - I2C driver can lock up the system 15
94926 - USB device descriptor error 15
95013 - USB does not automount when using SD image but does when using SPI image 15
96922 - UART software flow control not working when UART operates in DMA mode 16
113082 - UART performance at high baud rates 16
113400 - Bluetooth stress test failed on concurrent testing (WIFI +BT) 16
114515 - Intermittent failure of large data transfer while waking up from S3 state 16
115790 - LS-ADC read fails on Clanton-Hill 16
117031 - SLCAN issues 17
117220 - Your debugger may have limited support for Dwarf Version 4 symbol information 17
118349 - Use of libpthread, libasound or libstdc++ may trigger an illegal instruction exception 17
120516 - ACPI Tables indicates that TPM is present on platforms that have no TPM present. 18
83751 - USB Device Gadget g-ether is Not Fully Supported 18
128742 - sc16is7xx_spi: Driver Does not Reuse Old Device File Names When Reloaded 18
118224 - The Kingston Class4 SD Card May be Unavailable on S3 Resume 18
130452 - USB Gadget Device g-multi is not Supported 18
112270 - Linux Kernel not stripped of LOCK Prefix 19
118545 - GPIO access using the Arduino interface may cause the sketch to crash 19
127283 - Unable to compile glibc source code if using SDK provided by an SDK installer script 19



2.1 38292 - Cannot force MMC into 4-bit mode due to kernel bug

Title	Cannot force MMC into 4-bit mode due to kernel bug
Id	38292
Implication	There is a kernel bug that is seen when forcing MMC into 4-bit mode. If you use the command: modprobe sdhci debug_quirks=0x400000 Only one bit is set: SDHCI_QUIRK_FORCE_1_BIT_DATA, bit 22 The board fails to initialize; returning these errors: - 110 timeout - 5 I/O error
Workaround	Use the command: modprobe sdhci debug_quirks=0x8400000 This sets: SDHCI_QUIRK_FORCE_1_BIT_DATA, bit 22 SDHCI_QUIRK_MISSING_CAPS, bit 27

2.2 45539 - SDMediaDevice.efi is setting older 25 MHz cards to 50 MHz

Title	SDMediaDevice.efi is setting older 25 MHz cards to 50 MHz
Id	45539
Implication	25MHz SD cards will not be recognized or usable.
Workaround	Use 'Fast' 50MHz capable SD cards.

2.3 53037 - Linux kernel has some debug settings enabled by default

Title	Linux kernel has some debug settings enabled by default
Id	53037
Implication	The Quark kernel default configuration has some debug configuration settings enabled (e.g. in SPI subsystem and memory management). This results in an increased kernel footprint and may have a performance impact.
Workaround	Disable the unwanted debug settings in the relevant Yocto meta-intel-quark configurations and then rebuild.

2.4 57071 - Galileo board is unavailable after host computer sleeps

Title	Galileo board is unavailable after host computer sleeps
Id	57071
Implication	When the Galileo board is connected to a host computer that enters sleep mode, and the host is woken, the Galileo board will be unavailable on USB. This behavior is caused by the Gadget Serial driver and is seen on all OSes (Linux, Windows, Mac OS).
Workaround	There is no workaround, you must reboot the Galileo board.

2.5 58381 - Attempting to unload a Linux driver which is in use causes console to freeze

Title	Attempting to unload a Linux driver which is in use causes console to freeze
Id	58381

Implication	When a driver is in use (like for instance SD/MMC mass storage device when an SD card is mounted) and user tries to remove it using 'modprobe -r mmc_block' then existing console hangs. Existing console is not usable until board rebooted or mass storage device unmounted from other console.
Workaround	Make sure the driver is not use before trying to unload. For instance unmount mass storage device first, then unload mmc_block driver.

2.6 60003 - Legacy RTC 'Valid' time bit is set even though RTC contains invalid time

Title	Legacy RTC 'Valid' time bit is set even though RTC contains invalid time
Id	60003
Implication	Legacy RTC 'Valid' time bit is set even though RTC contains invalid time. Any software that trusts the 'Valid' bit without any sanity checks on the time/date may be using a corrupt date/time.
Workaround	None.

2.7 60147 - Quark enumerates incorrect device class as a USB CDC ACM device

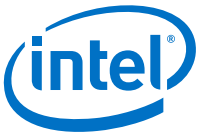
Title	Quark enumerates incorrect device class as a USB CDC ACM device
Id	60147
Implication	As a USB CDC ACM device, the Quark SoC enumerates a USB Device descriptor with Class, SubClass and DeviceProtocal 02, 00, and 00 respectively. This is incorrect given that the Quark CDC ACM setup uses Interface Association Descriptors. The USB specification recommends different values in the device descriptor when using IADs, consequently, Windows may generate errors. The values in the device descriptor should be EFh, 02h, 11h, respectively. Workaround
Workaround	NA

2.8 60803 - BIOS error when using 2G MMC card

Title	BIOS error when using 2G MMC card
Id	60803
Implication	2G Transcend MMC card (TS2GMMC4) is not recognised or is unusable.
Workaround	Use alternative MMC card.

2.9 63520 - SMBIOS fields are currently incorrect for the Quark reference platforms

Title	SMBIOS fields are currently incorrect for the Quark reference platforms
Id	63520
Implication	Only SMBIOS Type0 and Type2 fields have been validated to be correct. Software using any other SMBIOS entries may be using incorrect information.
Workaround	Only use validated SMIOS table entries.



2.10 64263 - Error detecting Western Digital USB 3.0 hard drive

Title	Error detecting Western Digital USB 3.0 hard drive
Id	64263
Implication	Western Digital USB3.0 HDD not recognized or usable.
Workaround	Use alternative USB HDD.

2.11 65706 - Hot plug of USB key intermittently fails

Title	Hot plug of USB key intermittently fails
Id	65706
Implication	USB key is not recognized or is unusable.
Workaround	Disconnect and reconnect the USB key.

2.12 65952 - USB Errors seen with Sandisk Cruzer 4GB Flash Drive

Title	USB Errors seen with Sandisk Cruzer 4GB Flash Drive
Id	65952
Implication	USB Key 'Sandisk Cruzer 4GB' is not recognized or is unusable in BIOS.
Workaround	Use alternative USB key.

2.13 66053 - Poor USB write performance caused by automounter

Title	Poor USB write performance caused by automounter
Id	66053
Implication	Automounting of USB memory is done with the '-o sync' flag by default. For VFAT filesystems (the default on USB and SD memory), there is a performance degradation which causes a typical write to take about 5 minutes.
Workaround	One workaround is to search and replace '-o sync' with '-o flush' in the /usr/bin/automount.sh file. However, the copy command will return before the write is complete. If the USB memory device is removed before the write is complete, the board may be in an unbootable state.

2.14 66218 - Nonfunctional USB key may break the detection for other functional USB keys on Clanton Hill

Title	Nonfunctional USB key may break the detection for other functional USB keys on Clanton Hill
Id	66218
Implication	This issue is seen only when non-functional USB key is connected to J1. Note that J12 (USB port0) and functional USB key connected to J10 (USB port1 via hub). Issue is not seen when positions are swapped.
Workaround	Only connect functional USB devices (USB devices that EDKII can function with without errors) to the system.

2.15 69965 - Quark EDKII default exception handler entry point is not valid

Title	Quark EDKII default exception handler entry point is not valid
Id	69965
Implication	If the system hits an exception (divide by zero for example) during Quark EDKII boot then the system will vector to the default exception handler at address 0xFFFFFFE4. As there is no valid exception handler at this address, system behavior is undefined.
Workaround	None.

2.16 75161 - Boot log error: memory range cannot be reserved

Title	Boot log error: memory range cannot be reserved
Id	75161
Implication	When booting, the following error is displayed in boot logs: [0.996963] pnp: PnP ACPI init [0.996963] ACPI: bus type pnp registered [1.003633] system 00:00: [mem 0xe0000000-0xe1ffffff] has been reserved [1.011283] system 00:00: [mem 0xfed1c000-0xfed1ffff] has been reserved [1.018649] system 00:00: [mem 0x000c0000-0x000dffff] has been reserved [1.026093] system 00:00: [mem 0x000e0000-0x000fffff] could not be reserved
Workaround	This error message will not affect board operation and can be ignored.

2.17 75172 - Clanton Hill: USB Error messages reported when booting debug build of EDKII

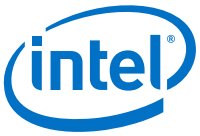
Title	Clanton Hill: USB Error messages reported when booting debug build of EDKII
Id	75172
Implication	The following error messages are reported during boot on Clanton Hill with a debug build of EDKII: Error Count : 3 EhcControlTransfer: error - Device Error, transfer - 2 However, no functional USB issues are observed and USB is working as expected. Issue is currently under investigation.
Workaround	None.

2.18 76832 - Error returned when booting from external media

Title	Error returned when booting from external media
Id	76832
Implication	When booting from external media that does contain an UEFI bootloader, the following error is returned: ERROR: C40000002:V3051002 I0 6D33944A-EC75-4855-A54D-809C75241F6C The boot manager reports this error if it finds bootable media that has no bootloader.
Workaround	Boot using media formatted as described in BSP Build and Software User's Guide.

2.19 78550 - Some USB keys not recognized by Quark EDKII recovery on Galileo and Galileo Gen2

Title	Some USB keys not recognized by Quark EDKII recovery on Galileo and Galileo Gen2
Id	78550



Implication	Recovery process will fail on Galileo and Galileo Gen2 with these USB keys. Currently the following USB keys have been seen to fail: 1) Sandisk cruzer 4GB 2) Transend 4GB
Workaround	Two potential workarounds have been identified: (1) Connect a USB hub to the Galileo Gen2 USB port and then connect the failing USB key(s) to the USB hub. The USB keys have been observed to pass in this configuration (2) Select a different USB key

2.20 83572 - I²C driver can lock up the system

Title	I²C driver can lock up the system
Id	83572
Implication	This is a very rare occurrence.
Workaround	None

2.21 118224 - SD card may be unavailable on S3 resume

Title	SD card may be unavailable on S3 resume
Id	89664/118224
Implication	The following error is reported when the error occurs "mmc0: error -110 (SD card was removed?) during S3 resume"
Workaround	Use another manufacturer's SD card.

2.22 94926 - USB device descriptor error

Title	USB device descriptor error
Id	94926
Implication	When warm boot with Telit HE910 module installed, occasionally a 'usb X-Y: device descriptor read/64, error -110' may be observed. Will need to wait for 1~2 min before having access to any USB devices. Once the problem is observer, it will occur every time the system is warm reboot. The problem is not observed without the Telit module installed.
Workaround	Perform a cold boot to recover.

2.23 95013 - USB does not automount when using SD image but does when using SPI image

Title	USB does not automount when using SD image but does when using SPI image
Id	95013
Implication	SPI image running Yocto 1.6 uses initd which provides a hotplug mechanism. Yocto using initd uses /etc/init.d/mdev.sh to echo mdev to /proc/sys/kernel/hotplug. The SD image running Yocto 1.6 uses systemd (YP1.6.1 SD) has no /etc/init.d/mdev.sh so USB is not automounted as a result.
Workaround	Manually mount USB device using mount command. For example, mount /dev/sda1 /media/mountpoint

2.24 96922 - UART software flow control not working when UART operates in DMA mode

Title	UART software flow control not working when UART operates in DMA mode
Id	96922
Implication	When UART is in DMA mode, software-based flow control will not work. Note hardware flow control will work in both PIO and DMA mode.
Workaround	To use software flow control, switch the UART to PIO mode by using the intel_quark_hsuart_dma.uartX_dma module parameter. Refer to the Quark Linux Software Developers' Manual for more details

2.25 113082 - UART performance at high baud rates

Title	UART performance at high baud rates
Id	113082
Implication	Due to X1000 SoC hardware limitations, the UART will not be able to operate at full throughput at baud rates above 115200 bps and will be subject to data overrun.
Workaround	1) Recommend to enable hardware flow control. 2) The UART driver if operated in PIO mode has improved performance at high baud rates, with a trade-off of higher CPU utilization.

2.26 113400 - Bluetooth stress test failed on concurrent testing (WIFI +BT)

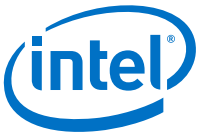
Title	Bluetooth stress test failed on concurrent testing (WIFI +BT)
Id	118349
Implication	While WiFi and Bluetooth run concurrent repeatedly, bluetooth might fail to connect and return message "l2test[23760]: Can't connect: Software caused connection abort (103)"
Workaround	None

2.27 114515 - Intermittent failure of large data transfer while waking up from S3 state

Title	Intermittent failure of large data transfer while waking up from S3 state
Id	114515
Implication	Intermittently, if the system enters S3 state in the presence of heavy traffic the network driver doesn't function after resume from S3 state.
Workaround	Restart the network service. ifconfig <interface name> down ifconfig <interface name> up

2.28 115790 - LS-ADC read fails on Clanton-Hill

Title	LS-ADC read fails on Clanton-Hill
Id	115790
Implication	Occasionally after power-up, the sysfs path to read ADC values "/sys/bus/iio/devices/iio:device0/in_voltageX_scale" does not exist. Instead, they are found in another path "/sys/bus/iio/devices/iio:device1/in_voltageX_scale"
Workaround	Read ADC from "/sys/bus/iio/devices/iio:device1/in_voltageX_scale" instead of "/sys/bus/iio/devices/iio:device0/in_voltageX_scale".



2.29 117031 - SLCAN issues

Title	SLCAN issues
Id	117031
Implication	If any SLCAN device (e.g. CAN USB) connect to xSLCAN enabled system, two SLCAN interfaces will be registered in system instead of one, and the last registered interface will not function correctly.
Workaround	NA

2.30 117220 - Your debugger may have limited support for Dwarf Version 4 symbol information

Title	Your debugger may have limited support for Dwarf Version 4 symbol information
Id	117220
Implication	Some debuggers (i.e. Intel System Debugger 2015) may have limited support for Dwarf Version 4 symbol information. If when debugging binaries, the line information and variable resolution in the debugger may be unsatisfactory i.e. unable to see local variables.
Workaround	Rebuild your project using the –gdwarf-3 option instead of simply -g

2.31 118349 - Use of libpthread, libasound or libstdc++ may trigger an illegal instruction exception

Title	Use of libpthread, libasound or libstdc++ may trigger an illegal instruction exception
Id	118349
Implication	The uclibc library contains a unsupported instruction in the pthread_cond_timedwait() function. If a program calls this function it will trigger an illegal instruction exception. The problem is caused by the default config for uclibc was set as CONFIG_686, thus it sets HAVE_CMOV which leads to presence of the illegal instruction. Additionally the glibc libasound and libstdc++ libraries also contain illegal cmov instructions.
Workaround	As a workaround for the libpthread issue change the config so that CONFIG_586=y and CONFIG_SUBARCH="i586" to follow the quark architecture. 1. Go to the yocto folder 2. mkdir -p meta-intel-quark/recipes-core/uclibc 3. mkdir -p meta-intel-quark/recipes-core/uclibc/uclibc 4. Create a file meta-intel-quark/recipes-core/uclibc/uclibc_git.bbappend cat > meta-intel-quark/recipes-core/uclibc/uclibc_git.bbappend FILESEXTRAPATHS_prepend := "${THISDIR}/${PN}:" SRC_URI += "file://i586-nlp.cfg/" 5. cat > /meta-intel-quark/recipes-core/uclibc/uclibc/i586-nlp.cfg CONFIG_586=y CONFIG_SUBARCH="i586" 6. bitbake -f -c cleanall uclibc 7. bitbake image-spi There is no workaround available for the libasound or libstdc++ issues.

2.32 120516 - ACPI Tables indicates that TPM is present on platforms that have no TPM present.

Title	ACPI Tables indicates that TPM is present on platforms that have no TPM present.
Id	120516
Implication	During BIOS boot ACPI tables are populated with devices that are detected on the platform. Trusted Platform Model (TPM) is currently present on CrossHill platform only. There is an issue that the ACPI tables report that the TPM is available on other platforms that have no TPM present. On Windows systems a 'yellow bang' will be seen in the device manager. On Linux the device INT3493:00 will be seen in /sys/bus/acpi/devices.
Workaround	NA

2.33 83751 - USB Device Gadget g-ether is Not Fully Supported

Title	USB device gadget g-ether is not fully supported
ID	83751
Implication	The X1000 USB device IP does not support USB alternative settings. As g-ether requires this functionality, it therefore is not supported.
Workaround	None

2.34 128742 - sc16is7xx_spi: Driver Does not Reuse Old Device File Names When Reloaded

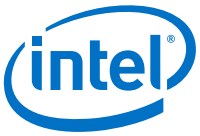
Title	sc16is7xx_spi: driver does not reuse old device file names when reloaded
ID	128742
Implication	Unloading and then reloading sc16is7xx_spi will cause it to enumerate its device file to the next availble reference i.e. /dev/ttySC0 will become /dev/ttySC1
Workaround	Use the new device handles

2.35 118224 - The Kingston Class4 SD Card May be Unavailable on S3 Resume

Title	The Kingston Class4 SD card may be unavailable on S3 resume
ID	118224
Implication	Error Code -110 is reported when the error occurs
Workaround	Use another manufacturer's SD card

2.36 130452 - USB Gadget Device g-multi is not Supported

Title	USB gadget device g-multi is not supported
ID	130452
Implication	The X1000 USB device has support for 3 endpoints. USB gadget g-multi requires 5 endpoints to operate. Therefore g-multi can not be supported on X1000
Workaround	None



2.37 112270 - Linux Kernel not stripped of LOCK Prefix

Title	Linux Kernel not stripped of LOCK Prefix
ID	112270
Implication	The BSP toolchain's assembler automatically strips the LOCK prefix at build time. The Kernel's build environment however ignores the directive to strip the LOCK prefix. The implication is that the kernel is not stripped of the LOCK prefix by the BSP toolchain.
Workaround	In order to cause problematic behavior such as segfaults, the LOCK Prefix must be on an instruction that also triggers a page fault. In this way the kernel is different to userspace software, as kernel locking primitiveness such as semaphores never trigger a page fault. Therefore stripping the kernel of the LOCK prefix, is not required for system stability.

2.38 118545 - GPIO access using the Arduino interface may cause the sketch to crash

Title	GPIO access using the Arduino interface may cause the sketch to crash
ID	118545
Implication	UIO access to the GPIO registers has been disabled by default as the interface is non-coherent with gpiolib. This non-coherency can result in a race condition during access to the GPIO registers. The Arduino application may use this UIO interface to enable faster GPIO access than using the sysfs interface of gpiolib. As the UIO interface has been disabled in the kernel by default, an Arduino sketch that is trying to use the UIO interface will crash with an error similar to that below. [50.563706] traps: sketch.elf[518] general protection ip:804a44f sp:bfbda5b8 error:0 in sketch.elf[8048000+7000]
Workaround	If the user is satisfied that there are no other applications that are accessing the GPIO registers (SPI for example will use gpiolib for chip select) then the UIO interface of the GPIO driver may be enabled. To do this, the user must modify the kernel configuration CONFIG_INTEL_QRK_GPIO_UIO to yes. This will enable the UIO interface on the GPIO drivers and allow the Arduino sketch to work. Note also that the GPIO drivers cannot be built into the kernel if you wish to also enable the UIO interface. This is due to the fact that the UIO driver is initialized after the GPIO drivers and will result in a kernel panic on boot if allowed.as kernel locking primitiveness such as semaphores never trigger a page fault. Therefore stripping the kernel of the LOCK prefix, is not required for system stability.

2.39 127283 - Unable to compile glibc source code if using SDK provided by an SDK installer script

Title	Unable to compile glibc source code if using SDK provided by an SDK installer script.
ID	127283
Implication	If using an SDK installer script (created using "bitbake image-full -c populate_sdk") the glibc and uclibc libraries & headers get installed to the same sysroot. This means that glibc files won't compile if using this sysroot.

Workaround	Option 1 - Use the build environment SDK (created using "bitbake meta-ide-support") Option 2 - If an SDK installer script is required (to install an SDK to a different computer) then make this simple change to meta/lib/oe/manifest.py and create the installer script again: Move PKG_TYPE_MULTILIB from last to first in the INSTALL_ORDER. Before INSTALL_ORDER = [PKG_TYPE_LANGUAGE, PKG_TYPE_MUST_INSTALL, PKG_TYPE_ATTEMPT_ONLY, PKG_TYPE_MULTILIB] After INSTALL_ORDER = [PKG_TYPE_MULTILIB, PKG_TYPE_LANGUAGE, PKG_TYPE_MUST_INSTALL, PKG_TYPE_ATTEMPT_ONLY]

3.0 Resolved Issues

This section contains issues resolved since package version 1.2.1.1.

Table 4. Resolved Issue Summary

140011 --- Buffer Overflow Flaws Discovered in the Way GLIBC Handles Some DNS Queries..... 21
140033 --- REACT 1-2016-2 Open SSL (Padding Oracle Attack) 21

3.1 140011 --- Buffer Overflow Flaws Discovered in the Way GLIBC Handles Some DNS Queries

Title	Buffer overflow flaws discovered in the way GLIBC handles some DNS queries.
ID	140011
Implication	Two DNS-related glibc buffer overflow flaws: • https://bugzilla.redhat.com/show_bug.cgi?id=1199525 A buffer overflow flaw was found in the way glibc's gethostbyname_r() and other related functions computed the size of a buffer when passed a misaligned buffer as input. • https://bugzilla.redhat.com/show_bug.cgi?id=1293532 A stack-based buffer overflow was found in the way the libresolv library performed dual A/AAAA DNS queries. Both risks mitigated by applying to CVE patches mentioned in the Resolution section.
Resolution	Security fix CVE-2015-1781 applied. Security fix CVE-2015-7547 applied. Refer to INTEL-SA-00049 for more information.

3.2 140033 --- REACT 1-2016-2 Open SSL (Padding Oracle Attack)

Title	REACT 1-2016-2 Open SSL (Padding Oracle Attack)
ID	140033
Implication	The vulnerability is a combination of two bugs, neither of which individually has security impact.The first bug (mishandling of negative zero integers) was reported to OpenSSL by Huzaifa Sidhpurwala (Red Hat) and independently by Hanno Bock in April 2015. The second issue (mishandling of large universal tags) was found by libFuzzer, and reported on the public issue tracker on March 1st 2016.
Resolution	Use SSL 1.0.1p recipe in order to mitigate against REACT1-2016-2 Open SSL (Padding Oracle Attack). Refer to CVE-2016-2107 (OpenSSL advisory) [High severity] 3rd May 2016 for more information.

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